

Chapter 296-828 WAC April 2006 Edition

Washington Industrial Safety & Health Act



F414-135-000 04/06 printing

Chapter 296-828 WAC

#### Other Rules that may apply to your workplace

- The WISHA Safety and Health Core Rules, Chapter 296-800 WAC, contain the basic requirements that apply to most employers in Washington. They also contain:
  - An Introduction that lists important information you should know, including a section on building, fire and electrical codes.
  - A Resource section that includes a complete list of all WISHA rules and a directory of the Labor and Industries (L&I) offices.
- Other WISHA rules may apply to you, depending on the activities and operations
  of your workplace. Contact your local L&I office if you're uncertain about which
  WISHA requirements apply to you.
- To go online to access all the Safety and Health Rules: <a href="http://www.lni.wa.gov/wisha">http://www.lni.wa.gov/wisha</a>
- If you would like to receive e-mail notification of rule updates, please register for the Standards Listserv on the WISHA web site at <a href="http://www.lni.wa.gov/home/listservs.htm">http://www.lni.wa.gov/home/listservs.htm</a>
- For a CD or paper copy contact us by:

Mail: Department of Labor and Industries P.O. Box 44620 Olympia, WA 98504-4620

Telephone: 1-800-4BE-SAFE (1-800-423-7233)

# **Notes**

# Hazardous Chemicals in Laboratories Chapter 296-828 WAC

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# **Notes**

# Hazardous Chemicals in Laboratories Chapter 296-828 WAC

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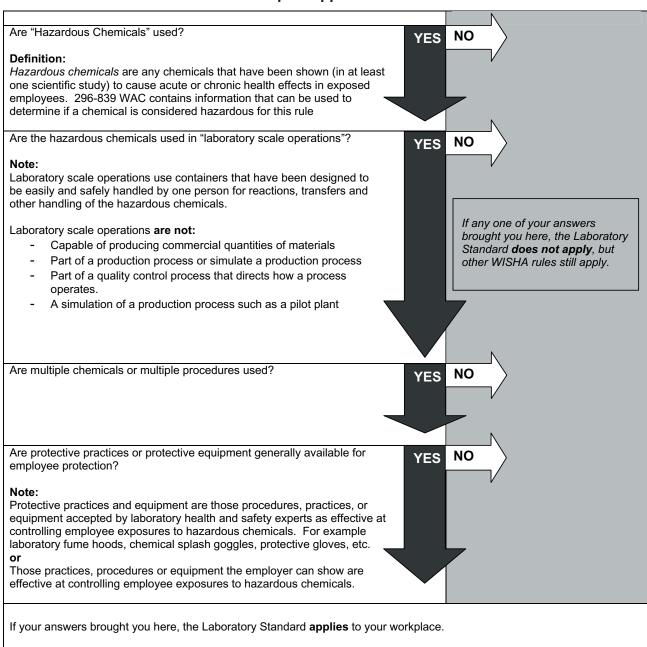
# **Notes**

WAC 296-828-100

**Scope** 

This Chapter applies to the laboratory use of hazardous chemicals. To determine if this Chapter applies to your workplace, use Table 1.

Table 1
Chapter Application





WAC 296-828-100

#### Scope

WAC 296-828-100

#### **Scope (Continued)**

#### **IMPORTANT:**

- ➤ When your laboratory operation is covered by this Chapter, and you use any of the substances in Table 2, the following applies:
  - The exposure limits and any requirement protecting employees from skin and eye contact in the rules listed in Table 2 will still apply.
  - Where the action level (or where no action level exists, the permissible exposure limit) is exceeded for a substance listed in Table 2, the exposure evaluation and medical surveillance requirements in the substance rule will still apply.
  - You aren't required to meet other requirements of the substance rule.
- > To get the permissible exposure limits (PELs) for hazardous chemicals used in your laboratory, see Chapter 296-841 WAC, Respiratory Hazards.

# Hazardous Chemicals in Laboratories WAC 296-828-100

Scope

WAC 296-828-100

#### **Scope (Continued)**

Table 2 **WISHA Regulated Hazardous Chemicals** 

2-Acetylaminofluorene
Acrylonitrile
Alpha-Naphthylamine
4-Aminodiphenyl
Arsenic (inorganic)
Asbestos
Benzene
Beta-Naphthylamine benzidine
Beta-Propiolactone
Bis-Chloromethyl ether
Butadiene
Cadmium
Coke ovens
Cotton dust
1, 2-Dibromo-3-chloropropane
3,3'-Dichlorobenzidine (and its salts)
4-Dimethylaminoazobenzene
Ethylene oxide
Ethyleneimine
Formaldehyde
lonizing radiation
Lead
Methyl chloromethyl ether
4,4' Methylene bis (2 - chloroaniline)
Methylene chloride
Methylenedianiline
4-Nitrobiphenyl
N-Nitrosodimethylamine
Vinyl chloride



# **Notes**

# Using Hazardous Chemicals in Laboratories WAC 296-828-200

**Section Contents** 

#### YOUR RESPONSIBILITY:

To protect employees from laboratory use of hazardous chemicals

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WAC 296-828-200

#### Rule

WAC 296-828-20005

#### **Chemical Hygiene Plan**

#### You must

- Develop and carry out a written chemical hygiene plan (CHP) that will protect your employees from hazardous substances in the laboratory and keep exposure levels below those listed in Respiratory Hazards, Chapter 296-841 WAC.
- Make sure the written plan is readily available to employees and their representatives.
- Include the following elements in your written CHP:
  - The names or job titles of the chemical hygiene officer, other personnel responsible for implementing the CHP, or when appropriate, the members of a chemical hygiene committee
  - Standard operating procedures that provide employee protection when working with hazardous substances
  - Criteria for how you will select and use control measures to reduce employee exposures to hazardous chemicals, especially chemicals known to be extremely hazardous
  - Additional employee protection for select carcinogens, reproductive toxins, and chemicals with high degree of acute toxicity. The following will be considered, when appropriate:
    - The establishment of exposure control areas
    - Containment devices, such as fume hoods or glove boxes
    - The safe removal of contaminated waste
    - Procedures for decontamination
  - Specific measures to make sure fume hoods and other protective equipment provide proper and adequate performance and are properly functioning

# Using Hazardous Chemicals

# **Using Hazardous Chemicals in Laboratories**

WAC 296-828-200

#### Rule

#### WAC 296-828-20005

#### **Chemical Hygiene Plan (Continued)**

- The circumstances when specific laboratory operation, activity, or procedure requires prior approval from the employer or their designated representative before implementation
- A description of how you are going to train and inform your employees about laboratory use of hazardous chemicals
- A description of your provisions for medical consultations and medical examinations
- Review and evaluate the effectiveness of your written CHP at least annually and update as necessary.



#### Reference:

This publication can provide you with additional information to help you with your written chemical hygiene plan:

 National Research Council, Prudent Practices for Disposal of Chemicals from Laboratories, National Academy Press, Washington, DC, 1995.

# Using Che

## Using Hazardous Chemicals in Laboratories

WAC 296-828-200

#### Rule

WAC 296-828-20010

#### **Exposure Evaluation**

#### **IMPORTANT:**

For any of the specific substances listed in Table 2 of the scope of this Chapter, you need to follow the exposure evaluation procedures found in the Chapters regulating those substances if employee exposure routinely exceeds the AL or PEL. For all other employee exposures follow this section to determine exposure evaluation procedures.

#### You must

 Determine if you could have a respiratory hazard as described in Chapter 296-841 WAC, Respiratory Hazards.



#### Reference:

For additional requirements relating to respiratory hazards, see:

- Chapter 296-841 WAC, Respiratory Hazards
- Chapter 296-842 WAC, Respirators
- The specific rule for your chemical

# Using Hazardous Chemicals in Laboratories WAC 296-828-200

Rule

WAC 296-828-20010

#### **Exposure Evaluation (Continued)**

#### You must

 Provide written notification of exposure monitoring results to employees represented by your exposure evaluation, within 5 business days after the results become known to you.



#### Note:

- > You can notify employees either individually or by posting the notification in areas readily accessible to all affected employees.
- > Posted notifications may need information that allows affected employees to determine which monitoring results apply to them.
- > Notification may be:
  - In any written form, such as hand-written or e-mail.
  - Limited to the required information, such as exposure monitoring results.



#### Reference:

For additional requirements relating to employee exposure records, go to Employee Medical and Exposure Records, Chapter 296-802 WAC.



WAC 296-828-200

#### Rule

WAC 296-828-20015

#### **Training**

#### You must

- Inform employees about the presence of hazardous chemicals at the following times:
  - At the time of initial assignment to a work area where hazardous chemicals are present
  - Prior to situations involving a new exposure to hazardous chemicals
- Train employees on all of the following:
  - Methods and observations for detecting the presence or release of hazardous substances. Examples of these methods and observations may include:
    - Monitoring conducted by you
    - Continuous monitoring devices
    - Visual appearance or odor of hazardous chemicals when being released.
  - The physical and health hazards of chemicals in the work area
  - The procedures and measures employees can use to protect themselves from hazardous substances. Examples of these include:
    - Appropriate work practices
    - Emergency procedures
    - · Personal protective equipment
- Provide refresher training to fit your needs

# Using Hazardous Chemicals

# **Using Hazardous Chemicals in Laboratories**

WAC 296-828-200

#### Rule

#### WAC 296-828-20015

#### **Training (Continued)**

- Provide information to employees on all of the following:
  - The contents of this Chapter and where to find a copy
  - Permissible exposure limits found in Chapter 296-841 WAC, Respiratory Hazards
  - Any recommended exposure levels for compounds without an exposure limit in the WISHA rules. Examples include:
    - The PELs found in the National Institute for Occupational Safety and Health (NIOSH) NIOSH Pocket Guide to Chemical Hazards 2004

#### or

- The American Conference of Governmental Industrial Hygienists (ACGIH®) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), 7th Edition.
- Signs and symptoms associated with exposures to hazardous chemicals used in the laboratory.
- Where to find a copy of:
  - Your chemical hygiene plan
  - Material safety data sheets (MSDSs), including those received from the chemical suppliers
  - Reference material on the hazards, safe handling, storage, and disposal of hazardous chemicals found in the laboratory.

WAC 296-828-200

#### Rule

WAC 296-828-20020

#### Labeling and Material Safety Data Sheets (MSDSs)

#### You must

- Make sure labels on incoming containers aren't removed or defaced.
- Keep and make available to employees any MSDS received with an incoming container of hazardous chemicals.

WAC 296-828-20025

#### **Chemicals Produced in Laboratories**

#### You must

Follow Table 3 for chemical substances produced in your laboratory.

Table 3
Lab Produced Chemical Substance Requirements

If	Then
The chemical is a hazardous chemical	Follow all appropriate requirements of this Chapter
A chemical by-product is produced and its composition is unknown	Assume it's a hazardous chemical and Follow your chemical hygiene plan to protect employees
You produce chemicals in your laboratory for users outside the laboratory	Follow Chapter 296-839 WAC, MSDS and Label Preparation

Rule

WAC 296-828-20030

#### **Medical Evaluations**

#### **IMPORTANT:**

For any of the specific substances listed in Table 2 of the scope of this chapter, you need to follow the medical evaluation procedures found in the chapters regulating those substances if employee exposure routinely exceeds the AL or PEL. For all other employee exposures follow this section to determine medical evaluation procedures.

#### You must

- 1) Make medical evaluations available when:
  - An employee develops signs or symptoms associated with a hazardous substance from laboratory exposure.
  - Any emergency situation that could cause a hazardous exposure, such as a spill, leak, or explosion, occurs.
  - A medical provider recommends a follow-up evaluation.
  - Exposure monitoring for any of the substances found in Table 2 reveals exposures routinely over the action level (AL) or in the absence of an AL the permissible exposure level (PEL).
- 2) Make sure medical evaluations are provided at reasonable times and places, and at no cost to employees.



#### Note:

This includes travel costs and wages associated with any time spent obtaining the medical evaluation.



#### Rule

WAC 296-828-20030

#### **Medical Evaluations (Continued)**

#### You must

- Provide the LHCP the following information before the medical evaluation is performed:
  - The name of the hazardous chemicals the employee may have been exposed to
  - Any signs or symptoms of exposure the employee has.
  - A description of the conditions under which the exposure occurred.
  - The exposure monitoring results for the conditions, if available
- Obtain the LHCP's written opinion for each medical evaluation that includes the following:
  - Recommendations for medical follow-up
  - Any medical conditions found that would increase the employee's risk for impairment from exposure to a hazardous chemical
  - A statement that the employee has been informed of exposure-related medical results and conditions that require further examination or treatment
  - A written opinion that doesn't contain any medical information unrelated to the employee's occupational exposures
- If the written opinion contains any medical information unrelated to occupational exposures, return it to the LHCP and obtain a revised version without the additional medical information



#### Reference:

For additional requirements relating to employee medical records, go to Employee Medical and Exposure Records, Chapter 296-802 WAC.

# Hazardous Chemicals in Laboratories WAC 296-828-300

#### **Definitions**

#### **Action level**

An airborne concentration of a hazardous substance that's calculated as an 8-hour time-weighted average, and initiates certain requirements to be followed such as exposure monitoring or medical surveillance.

#### Carcinogens

See "Select carcinogen"

#### Chemical hygiene officer

An employee designated by the employer who is qualified by training or experience to provide technical guidance in the development and implementation of the chemical hygiene plan. This definition isn't intended to place limitations on the designated employee's position description or job classification within the employer's organization.

#### Chemical hygiene plan

A written program developed and implemented by the employer that establishes procedures, equipment, personal protective equipment, and work practices to protect employees from the health hazards of the chemicals used in the laboratory.

#### Container

Any container, except for pipes or piping systems that contains a hazardous substance. For example, it can be any of the following:

- Barrel
- Bottle
- Can
- Cylinder
- Drum
- Reaction vessel
- Storage tank



WAC 296-828-300

#### **Definitions**

#### Day

Any part of a calendar day.

#### Designated representative

Any one of the following:

- Any individual or organization to which an employee gives written authorization
- A recognized or certified collective bargaining agent without regard to written employee authorization
- The legal representative of a deceased or legally incapacitated employee.

#### **Emergency**

Any event that could or does result in the unexpected, significant release of a hazardous substance. Examples of emergencies include equipment failure, container rupture, or control equipment failure.

#### **Exposure**

The contact an employee has with a hazardous substance, whether or not protection is provided by respirators or other personal protective equipment (PPE). Exposure can occur through various routes of entry such as inhalation, ingestion, skin contact, or skin absorption.

#### Hazardous chemical

A chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes, or mucous membranes.

#### Laboratory

A facility where the "laboratory use of hazardous substances" takes place. A workplace where relatively small amounts of hazardous substances are used on a nonproduction basis.



WAC 296-828-300

#### **Definitions**

#### Laboratory-type hood

A device located in a laboratory, enclosure on 5 sides with a moveable sash or fixed partial enclosed on the remaining side, constructed and maintained to draw air from the laboratory and to prevent or minimize the escape of air contaminants into the laboratory, and allows chemical manipulations to be conducted in the enclosure without insertion of any portion of the employee's body other than hands and arms.

#### Note:

Walk-in hoods with adjustable sashes meet the above definition provided that the sashes are adjusted during use so that the airflow and the exhaust of air contaminants aren't compromised and employees don't work inside the enclosure during the release of airborne hazardous substances.

#### Laboratory scale

Work with substances in which the containers used for reactions, transfers and other handling of the substances are designed to be easily and safely manipulated by one person. "Laboratory scale" **does not** include workplaces producing commercial quantities of materials.

#### Laboratory use

The handling or use of hazardous substances that includes **all** the following:

- Chemical manipulations conducted on a "laboratory scale"
- Multiple chemical procedures or chemicals are used
- The procedures aren't part of a production process, nor in any way simulate a production process.
- "Protective laboratory practices and equipment" are available and are commonly used to minimize the potential for employee exposures to hazardous substances.



WAC 296-828-300

#### **Definitions**

#### Licensed healthcare professional (LHCP)

An individual whose legally permitted scope of practice allows him or her to provide some or all of the healthcare services required for medical evaluations

#### Material safety data sheet (MSDS)

Written, printed, or electronic information (on paper, microfiche, or on-screen) that informs manufacturers, distributors, employers or employees about a hazardous substance, its hazards, and protective measures as required by Material Safety Data Sheet and Label Preparation, Chapter 296-839 WAC.

#### Permissible exposure limits (PELs)

PELs are employee exposures to toxic substances or harmful physical agents that must not be exceeded. PELs are also specified in WISHA rules found in other chapters.

#### Physical hazard

As used in Employer chemical hazard communication, WAC 296-800-170 means a chemical that has scientifically valid evidence to show it's one of the following:

- Combustible liquid
- Compressed gas
- Explosive
- Flammable
- Organic peroxide
- Oxidizer
- Pyrophoric
- Unstable (reactive)
- Water reactive



WAC 296-828-300

#### **Definitions**

#### Protective laboratory practices and equipment

Laboratory procedures, practices, and equipment accepted by laboratory health and safety experts as effective, that can be shown to be effective, in minimizing the potential for employee exposure to hazardous substances.

#### Reproductive toxin

Chemicals that affect reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)

#### Select carcinogen

Any substance meeting one of the following criteria:

- Regulated by WISHA as a carcinogen
- Listed in the "known to be carcinogens" category in the latest edition of the Annual Report on Carcinogens by the National Toxicity Program (NTP).
- Listed in Group I (carcinogenic to humans) in the latest editions of the International Agency for Research on Cancer (IARC) Monographs.
- Listed in either group 2A or 2B by IARC or in the category "reasonably anticipated to be carcinogens" by the NTP, and causes statistically significant tumor incidence in experimental animals in accordance with any of the following criteria:
  - After an inhalation exposure of 6 to 7 hours a day, 5 days a week, for a significant portion of a lifetime to dosages of less than 10 mg/m³

or

After repeated skin application of less than 300 mg/kg of body weight per week

or

After oral dosages of less than 50 mg/kg of body weight per day.

#### Time-weighted average (TWA<sub>s</sub>)

An exposure limit averaged over an 8-hour period that must not be exceeded during an employee's workday.



Chapter 296-828 WAC

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#### **Statutory Authority**

#### 296-828-100 Scope.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-100, filed 01/03/06, effective 04/01/06]

#### 296-828-200 Using hazardous chemicals in laboratories.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-200, filed 01/03/06, effective 04/01/06]

#### 296-828-20005 Chemical hygiene plan.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-20005, filed 01/03/06, effective 04/01/06]

#### 296-828-20010 Exposure evaluation.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-20010, filed 01/03/06, effective 04/01/06]

#### 296-828-20015 Training.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-20015, filed 01/03/06, effective 04/01/06]

#### 296-828-20020 Labeling and material safety data sheets (MSDSs).

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-20020, filed 01/03/06, effective 04/01/06]

#### 296-828-20025 Chemicals produced in laboratories .

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-20025, filed 01/03/06, effective 04/01/06]

#### 296-828-20030 Medical evaluations.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-20030, filed 01/03/06, effective 04/01/06]

#### 296-828-300 Definitions.

[Statutory Authority: RCW 49.17.010, .040, .050, and .060. 06-02-060 (Order 05-19), § 296-828-300, filed filed 01/03/06, effective 04/01/06]

# **Notes**